

WHAT IS CLAIMED IS:

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5 1. In a coin discriminating device, an apparatus for cleaning a mass of coins prior to conveyance to a coin discriminator, comprising:

a container having at least a first opening for admitting a first plurality of said mass of coins and a second opening, smaller than said first opening, for permitting exit of dirt from said container; and

a driver, coupled to said container so as to move said container and agitate said first plurality of coins.

2. Apparatus, as claimed in claim 1, wherein said container includes a third opening, larger than said second opening, permitting coins to exit said container.

3. Apparatus, as claimed in claim 2, further comprising a first endpiece coupled to said container adjacent said first opening and defining a coin entry opening, wherein said first endpiece is manually removable from said container, without the use of tools.

4. Apparatus, as claimed in claim 3, further comprising a second endpiece coupled to said container adjacent said third opening and defining a coin exit opening, wherein said second endpiece is manually removable from said container, without the use of tools.

5. Apparatus, as claimed in claim 4, further comprising means to prevent coupling said first endpiece adjacent said third opening.

6. Apparatus, as claimed in claim 5, wherein said means includes a resilient tab and slot system, configured differently from a corresponding tab and slot system employed with said second endpiece and third opening.

7. Apparatus, as claimed in claim 4, wherein at least one of said first and second endpieces includes a bearing to accommodate rotation of said container.

8. Apparatus, as claimed in claim 4, wherein at least one of said first and second endpieces includes a component of a transmission system for coupling said driver to said container.

9. Apparatus, as claimed in claim 8, wherein said component comprises a gear.

10. Apparatus, as claimed in claim 2, further comprising a chute adjacent said third opening for directing coins, output from said third opening, in an output direction, said chute having at least a first tapering region.

11. Apparatus, as claimed in claim 1, wherein said driver is coupled to said container to pivot said container about at least a first axis.

12. Apparatus, as claimed in claim 1, wherein said driver is coupled to said container to rotate said container about at least a first axis.

13. Apparatus, as claimed in claim 12, further comprising a frame, wherein said container is coupled to said frame via first and second bearings displaced from each other along said first axis.

14. Apparatus, as claimed in claim 13, wherein said container is removably coupled to said frame.

15. Apparatus, as claimed in claim 13, wherein at least one of said first and second bearings may be moved from an operating position to a position to facilitate removal of said container.

16. Apparatus, as claimed in claim 15, comprising means for normally urging said one of said first and second bearings toward said operating position.

17. Apparatus, as claimed in claim 15 wherein said one of said first and second bearings may be moved to said position to facilitate removal in a manual fashion, without the need for tools.

18. Apparatus, as claimed in claim 1, wherein said container includes a plurality of openings for permitting exit of dirt from said container.

19. Apparatus, as claimed in claim 1, further comprising at least a first vane protruding inwardly from an interior surface of said container.

20. Apparatus, as claimed in claim 19, wherein said first vane contacts the interior surface of said container in a first region, defining at least a first plane which is tangent to said interior surface in said first region, and wherein at least a first portion of said first vane is non-orthogonal to said first plane.

21. Apparatus, as claimed in claim 20, wherein at least a second portion of said first vane is orthogonal to said first plane.

~~22. Apparatus, as claimed in claim 19, wherein said container has a container longitudinal axis and wherein at least a portion of said vane defines a vane longitudinal axis inclined to said container longitudinal axis~~

23. Apparatus, as claimed in claim 1 further comprising at least a first vane protruding inwardly from an interior surface of said container and at least a second vane protruding inwardly from an interior surface of said container.

24. Apparatus, as claimed in claim 23, wherein said container has a longitudinal axis, wherein said first vane includes at least a first and second segments, defining a first node therebetween, wherein at least a first portion of said first segment is laterally displaced in a first direction from a second portion of said first segment and wherein at least a part of said second segment is laterally displaced from said second portion of said first segment in a direction opposite to said first direction.

25. Apparatus, as claimed in claim 24, wherein said second vane includes at least third and fourth segments, defining a second node therebetween, wherein at least a first portion of said third segment is laterally displaced in a second direction from a second portion of said third segment and wherein at least a part of said fourth segment is laterally displaced from said second portion of said third segment in a direction opposite to said second direction, and wherein said second node is longitudinally displaced from said first node.

26. Apparatus, as claimed in claim 1, further comprising a plurality of dimples, protruding inwardly from the interior surface of said container.

27. Apparatus, as claimed in claim 1 further comprising an entryway for permitting coins to enter into said container, which includes a first upwardly projecting wall and a second downwardly projecting wall, spaced from said upwardly projecting wall such that a rigid elongate object having a maximum linear dimension greater than about 2.5 inches can not entirely pass beyond said first wall.

~~28. Apparatus, as claimed in claim 1, wherein said container has an interior surface and the interior surface of said container includes at least a first substantially flat portion.~~

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30. Apparatus, as claimed in claim 1, wherein said container has an interior surface and the interior surface of said container includes substantially flat walls.

32. Apparatus, as claimed in claim 1, further comprising a frame and a dirt collection tray, coupled to said frame in such a way as to permit removal of said tray manually, without the need for tools.

34. Apparatus, as claimed in claim 33, further comprising at least a first signaling device for indicating that additional coins may be moved from said input tray along a path toward said container.

a container, defining a container interior space, and having at least a first means for admitting a first plurality of said mass of coins and at least one opening for permitting exit of dirt from said container; and

36. Apparatus, as claimed in claim 35, further comprising means for preventing face-to-face contact between an entire face of one of said plurality of coins and an interior surface of said container.

38. Apparatus, as claimed in claim 36, wherein said means for preventing comprises an interior surface curvature of said container.

39. Apparatus, as claimed in claim 35, further comprising means for preventing rigid elongate objects from entering said container.

40. Apparatus, as claimed in claim 35, further comprising means for sensing a slowing or halting of container movement.

41. ~~Apparatus, as claimed in claim 40, further comprising means for reversing rotation of said container in response to sensing a slowing or halting of container movement.~~

42. Apparatus, as claimed in claim 35, further comprising means for flowing air through said container.

43. A method for cleaning a plurality of coins, comprising:
 providing a frame;
 providing at least a first container having a plurality of holes sized to prevent passage therethrough of the smallest of said plurality of coins;
 mounting said first container to said frame to permit rotation of said container about a first axis;
 introducing said plurality of coins into said first container; and
 rotating said first container about said first axis.

44. A method, as claimed in claim 43, further comprising effecting removal of said plurality of coins from said container, after at least some dirt has passed through at least some of said plurality of holes during said step of rotating.

45. A method, as claimed in claim 44, further comprising providing at least a first vane adjacent an interior surface of said container, to assist in said step of effecting removal of said plurality of coins.

46. A method, as claimed in claim 44, wherein said step of mounting includes mounting such that said first axis is inclined to the horizontal, to assist in said step of effecting removal of said plurality of coins.

47. ~~In a coin discriminating device, an apparatus for conveying a plurality of coins comprising:
 a trough defining an upper surface, sized to accept said plurality of coins, and having a first entry edge and a second, opposed, exit edge, defining a longitudinal axis extending in a direction having a component from said entry edge toward said exit edge;~~

said upper surface having a curvature in at least a first direction, over the entirety of said upper surface, said curvature sufficient to avoid surface-tension adhesion between said surface and any of said plurality of coins.

48. Apparatus, as claimed in claim 47, wherein said upper surface has a radius of curvature on every point thereof of at least about nine inches.

49. Apparatus, as claimed in claim 47, further comprising at least a first pin protruding from said upper surface.

50. A trommel, comprising:
at least a first portion and a second concave portion coupled to said first portion to permit said trommel to be reconfigured between a first open configuration and a second closed configuration.

51. A trommel, as claimed in claim 50, wherein said trommel, when in said closed configuration, has an interior surface, and wherein, when said trommel is in said open configuration, substantially all of said interior surface is accessible.

52. A trommel, as claimed in claim 50, wherein said first and second portions are rotatably coupled, defining a first side axis.

53. A trommel, as claimed in claim 52, said trommel is coupled to a driver for rotation about a rotation axis and wherein said first side axis is substantially parallel to said rotation axis.

54. A trommel, as claimed in claim 50, wherein at least one of said first and second portions comprises first and second walls meeting at an angle.

55. ~~A trommel, as claimed in claim 50, further comprising at least a first latch, releasably holding said first and second portions in said closed configuration..~~

56. Apparatus, as claimed in claim 30 wherein said container includes four wall to define a quadrilateral interior cross section.

57. A coin-discriminating device comprising:

a first pivotable feed tray inclined in a first direction pivotable about a first pivot axis and configured to move coins therein over a ridge defined by said pivot axis;

a coin conditioner configured to receive coins moved over said ridge and tumble said coins with respect to one another for dislodging non-coin materials and to permit exit of coins through at least a first opening in said coin conditioner;

a hopper for receiving coins from said coin conditioner;

a coin discriminator, including a plurality of sensors, for receiving coins from said hopper and discriminating at least a first coin denomination from a second coin denomination; and

output means for providing output indicating a number of at least a first coin denomination.

58. A coin discriminating system, configured to receive a mass of coins, said mass of coins defining a smallest-diameter coin, the device comprising:

a frame;

an input tray, coupled to said frame, with a bottom surface perforated by a plurality of circular holes having a diameter less than that of the smallest-diameter coin, said input tray pivotable about a substantially horizontal axis defining a peak, from a first position inclined downward from said peak, to a second position wherein said bottom surface is raised, with respect to the position of said bottom surface when said input tray is in said first position;

a first chute inclined downwardly in a direction away from said peak such that said peak is between said input tray and said first chute wherein coins moved over said peak flow down said first chute;

a first long object trap comprising first and second pins projecting upwardly from the upper surface of said first chute;

a second long object trap comprising a first ascending substantially vertical wall defining a free upper edge; a second descending substantially vertical wall defining a free lower edge, spaced from said first wall and a floor positioned to prevent passage, from said first chute to said second chute, of elongate rigid objects having at least a first length;

a second chute inclined downwardly in substantially the same direction as said first chute is inclined, having a surface which is curved throughout to prevent adjacent coins from contacting said second chute surface at more than two points, said second chute defining an output region;

a trommel, rotatably mounted with respect to said frame, and having an interior with an interior surface defining at least a first corner, said trommel having a plurality of circular holes having a diameter less than that of the smallest-diameter coin, said trommel having an input opening aligned with said output region of said second chute for receiving coins from said second chute into the interior of said trommel, said trommel having an output opening;

a plurality of vanes positioned on said interior surface of said trommel and extending into said interior of said trommel wherein, upon rotation of said trommel, said coins are moved toward said output opening of said trommel;

a coin discriminator;

59. In a coin discriminating device, an apparatus for cleaning a mass of coins prior to conveyance to a coin discriminator, comprising:

a container, removably coupled to said frame, having at least a first opening for admitting a first plurality of

said mass of coins and a second opening, smaller than said first opening, for permitting exit of dirt from said container.

60. Apparatus, as claimed in claim 1, further comprising a frame and a tray, coupled to said frame, for collecting said dirt.